APPENDIX

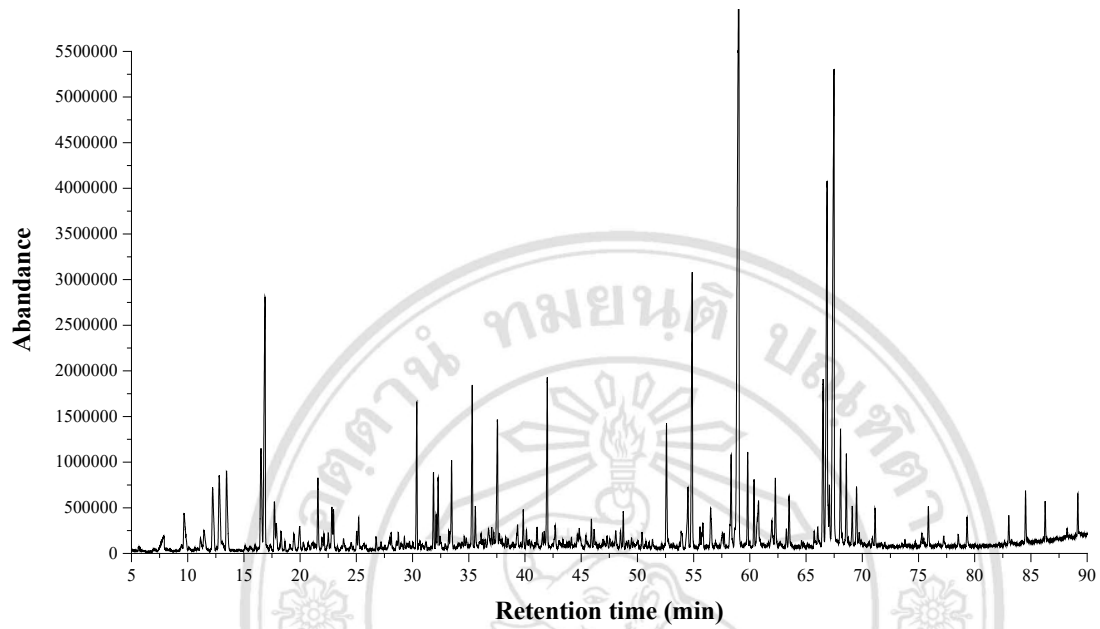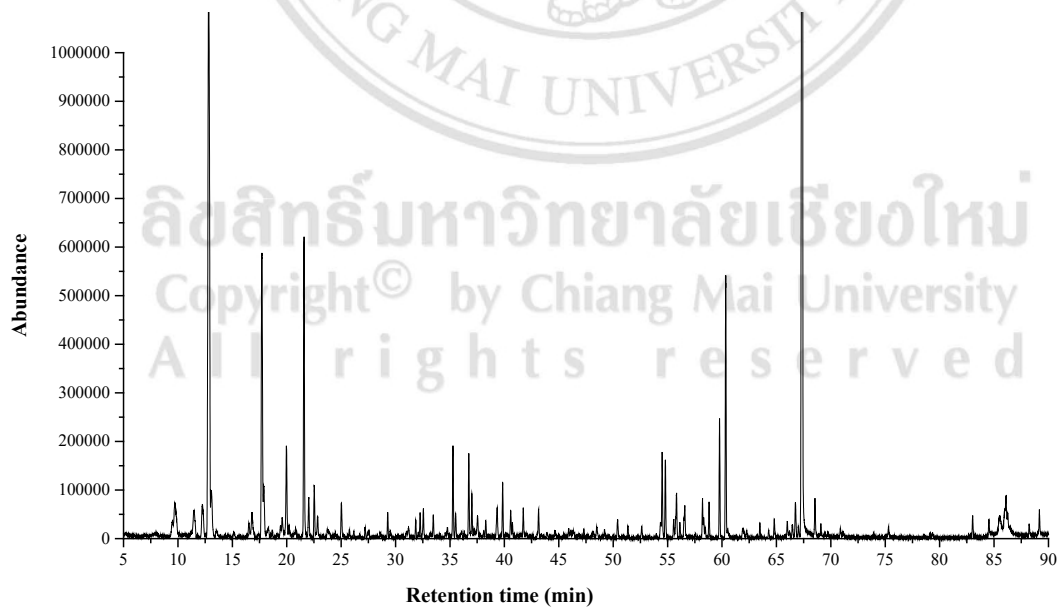**Figure A.1** Total ion chromatogram of fresh leaves

Figure A.2 Total ion chromatogram of steamed leaves
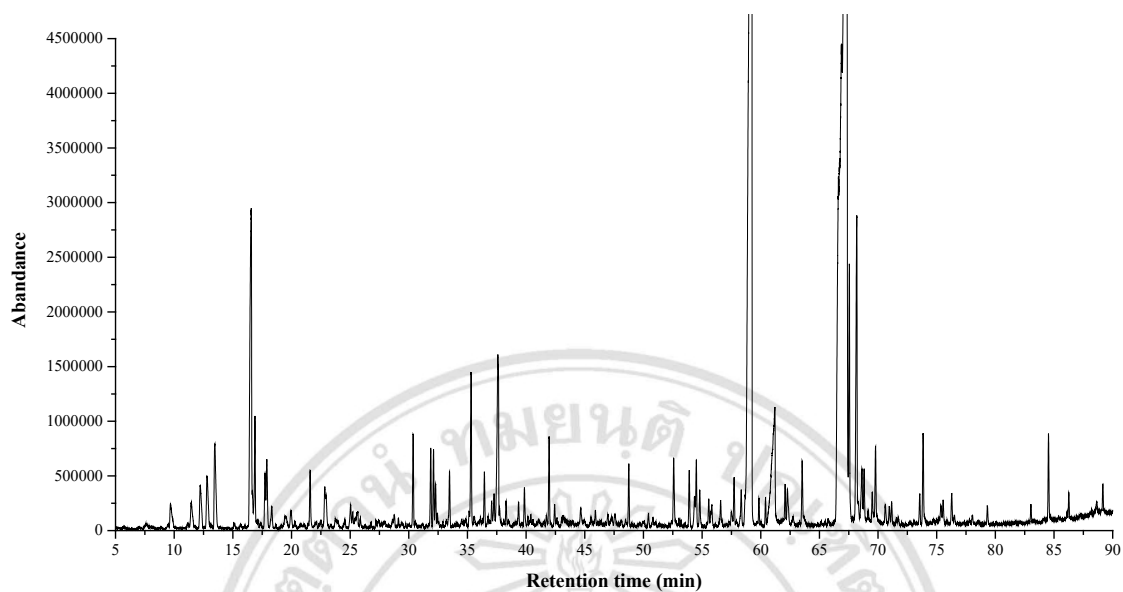
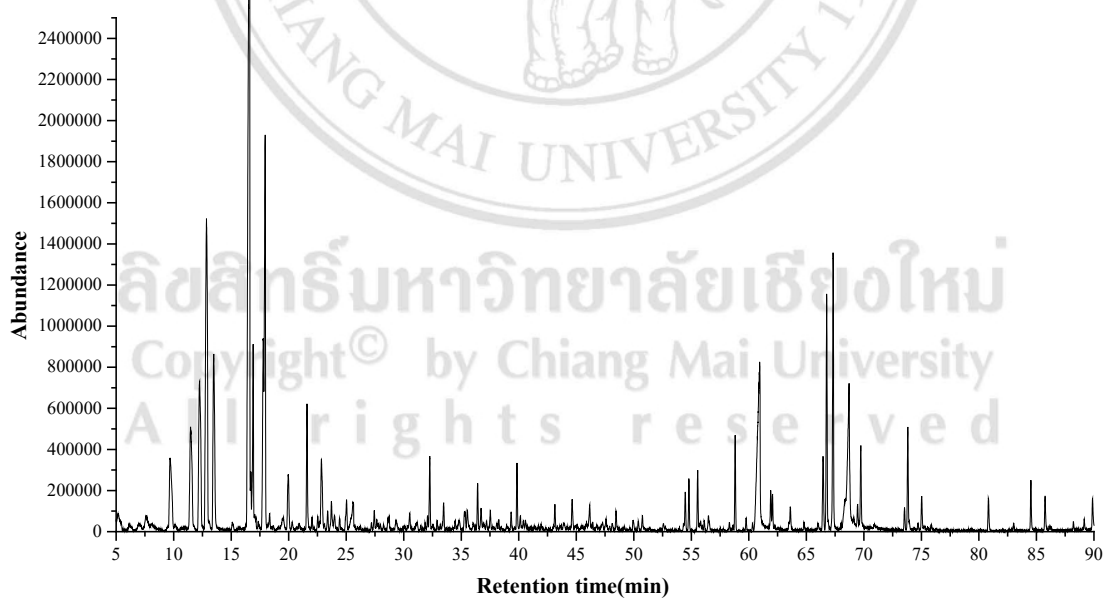**Figure A.3** Total ion chromatogram of 15 days fermented leaves

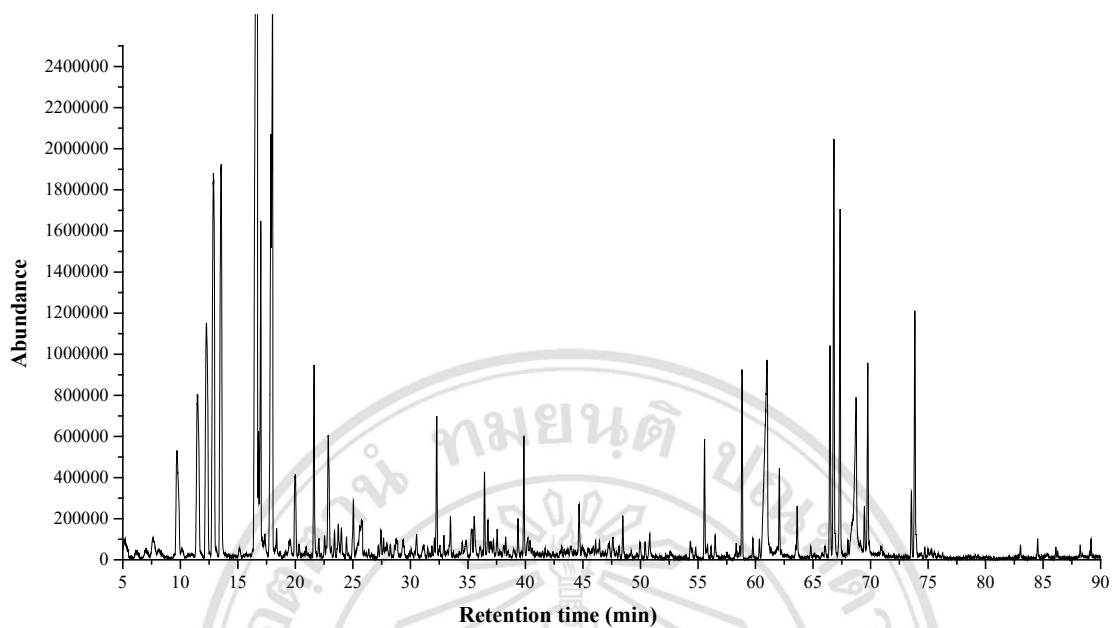**Figure A.4** Total ion chromatogram of 30 days fermented leaves

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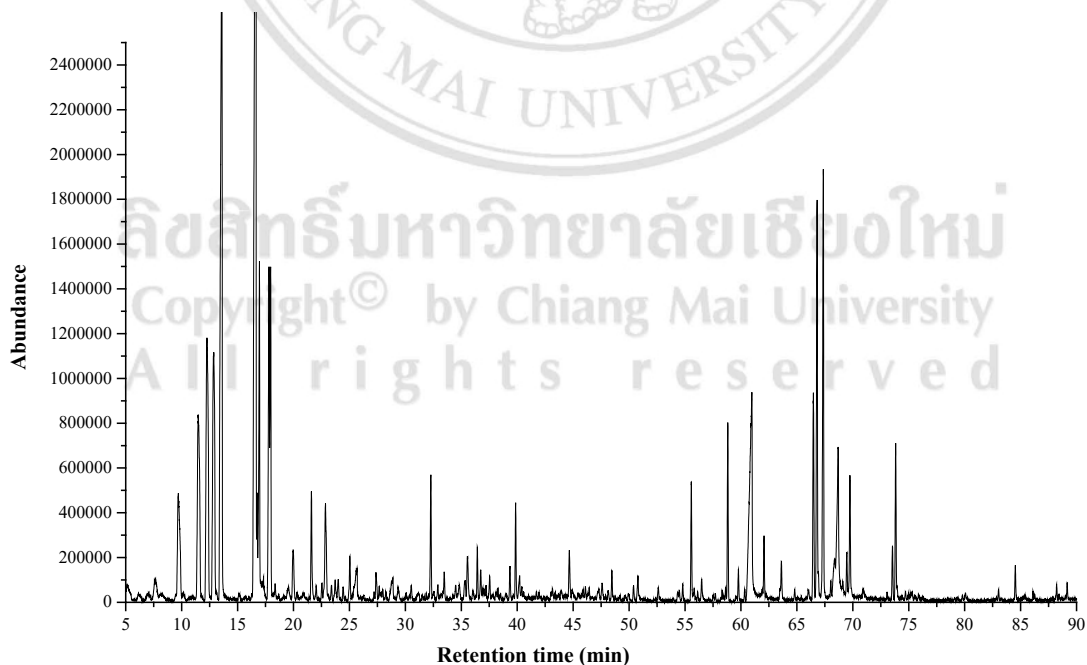**Figure A.5** Total ion chromatogram of 45 days fermented leaves

Figure A.6 Total ion chromatogram of 60 days fermented leaves
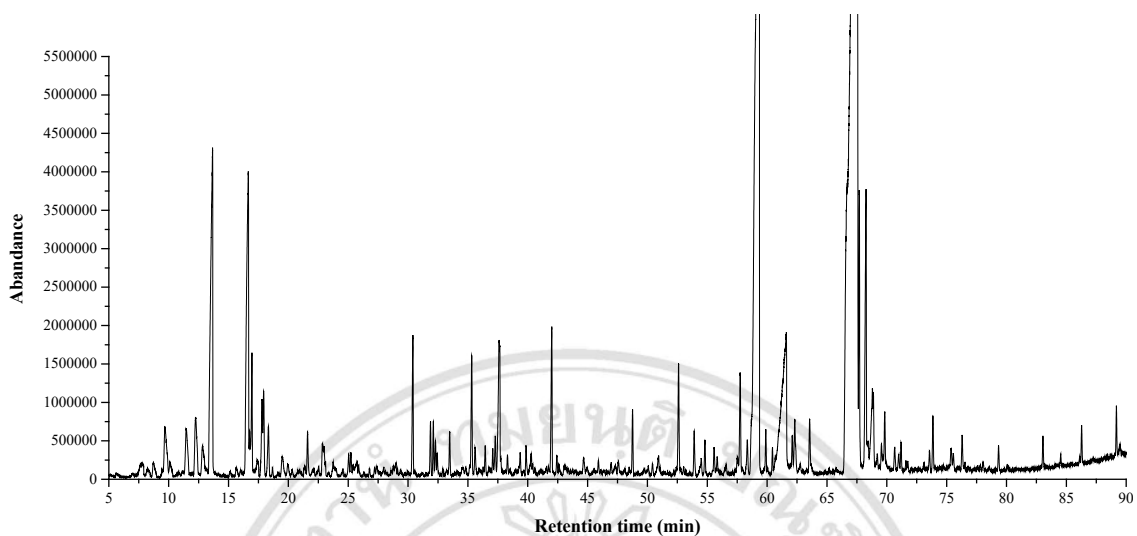
100

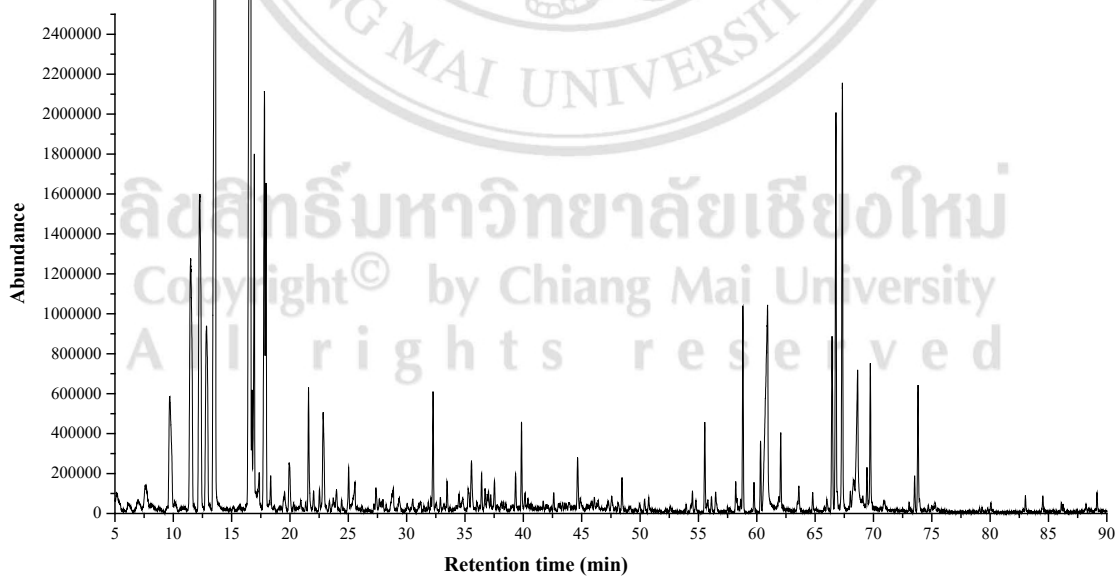**Figure A.7** Total ion chromatogram of 90 days fermented leaves

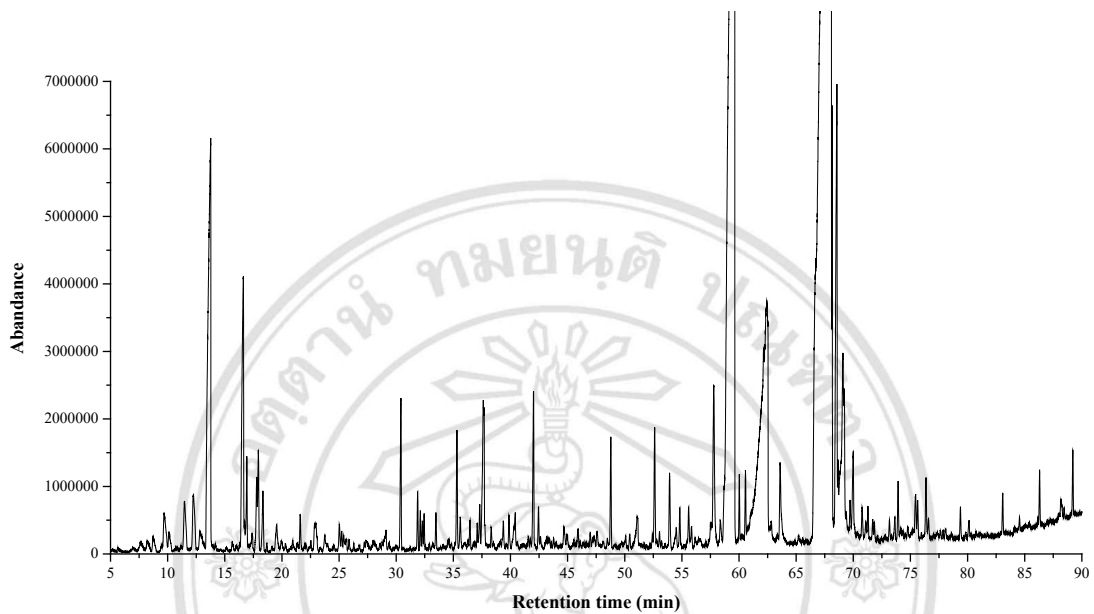**Figure A.8** Total ion chromatogram of 120 days fermented leaves

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Figure A.9 Total ion chromatogram of 150 days fermented leaves

Calculation of the detection limit [89]

The detection limit was calculated from the linear regression line of the calibration curve. It was determined as follows:

$$Y = a + bx \tag{1}$$

where

Y = Instrument signals

x = concentrations

a = intercept

b = slope of the straight line

$$Y_L = YB + kSB \tag{2}$$

$S_{y/x}$ can be calculated from the equation

where

Y_L = lowest detectable instruments signals

Y_B = Y intercept, a

K = constant depending on definition such as

k = 1, 5, 3 of 10 according to IUPAC, in calculation of limit of detection, k = 3 was used in this work

S_B = blank signal standard deviation

$$S_{y/x} = \sqrt{\frac{\sum (Yi - \hat{Y})^2}{n-2}} \tag{3}$$

where

Yi = response value from instrument corresponding to the individual x value

$\hat{Y}_i$ = value of y on the instrument corresponding to the individual x value

n = number of point on the calibration line

From equation 1 and 2

$$Y_L = a + 3\ S_{y/x} \qquad\qquad (4)$$

$$Y_L = a + b\ C_L \qquad\qquad (5)$$

Thus,

$$a + 3\ S_{y/x} = a + b\ C_L$$

$$C_L = 3\ S_{y/x}\ /b \qquad\qquad (6)$$

The values lower than LOD are to be equated as called non-detected.

For example, from data of the gallic acid calibration curve with the concentration range 0.6-1.5 ppm:
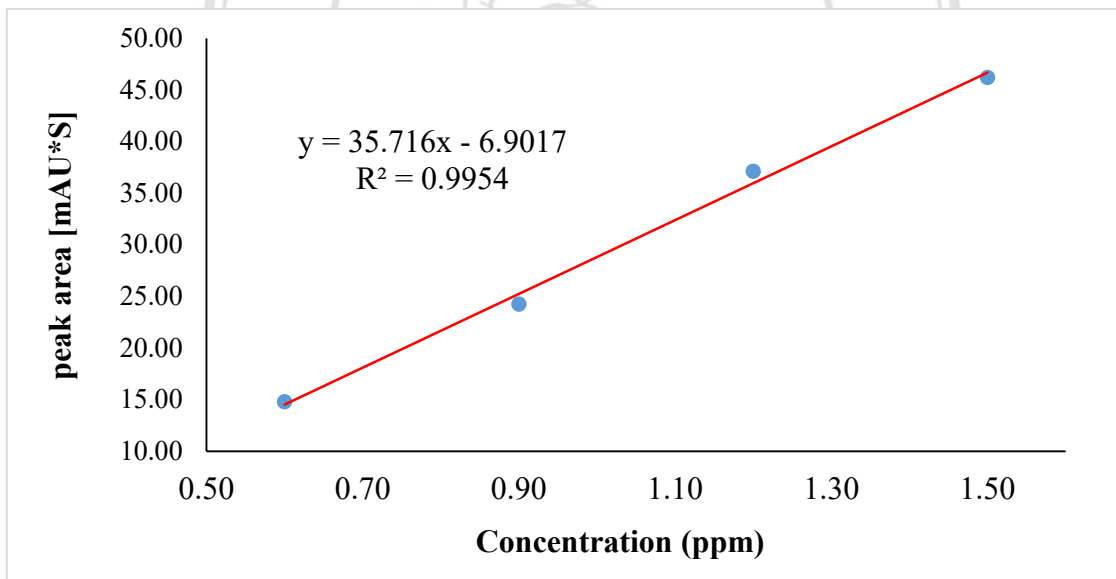

Figure A.10 Calibration curve of gallic acid

Linear regression of Figure A. 10; $y = 35.716x - 6.9017$

$$R^2 = 0.9954$$

Table A.1 The data used for calculation of the detection limit of gallic acid

	ppm (Xi)	Signal (Yi)	$Xi - \bar{X}$	$Yi - \bar{Y}$	$(Xi - \bar{X})(Yi - \bar{Y})$	$(Xi - \bar{X})^2$	$\widehat{Yi}$	$Yi - \widehat{Yi}$	$(Yi - \widehat{Yi})^2$
	0.6	13.76	-0.45	-13.01	5.86	0.20	12.26	1.50	2.25
	0.9	20.23	-0.15	-6.54	0.98	0.02	21.93	-1.70	2.89
	1.2	30.51	0.15	3.74	0.56	0.02	31.61	-1.10	1.20
	1.5	42.58	0.45	15.81	7.11	0.20	41.28	1.30	1.69
Sum	**4.2**	**107.09**			**14.51**	**0.45**			**8.03**
Average	**1.05**	**26.77**							

By using equations 5 and 6

$$S_{y/x} = \sqrt{\frac{\sum (Yi - \widehat{Y})^2}{n-2}}$$

$$S_{y/x} = \sqrt{\frac{8.03}{4-2}}$$

$$S_{y/x} = 2.00$$

and

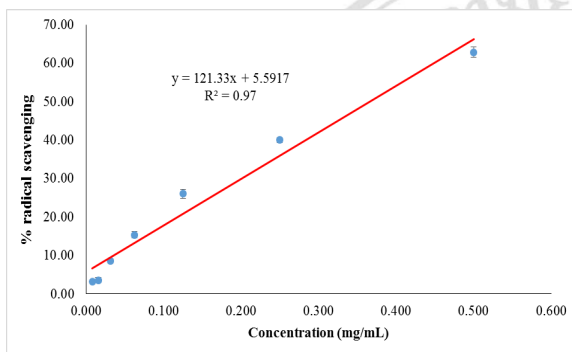$$C_L = 3\ S_{y/x}\ /b$$

$$C_L = 3\ (2)/35.716$$

$$C_L = 0.19$$

∴ Detection limit of gallic acid is 0.19 ppm

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Calibration curve for IC$_{50}$ calculation
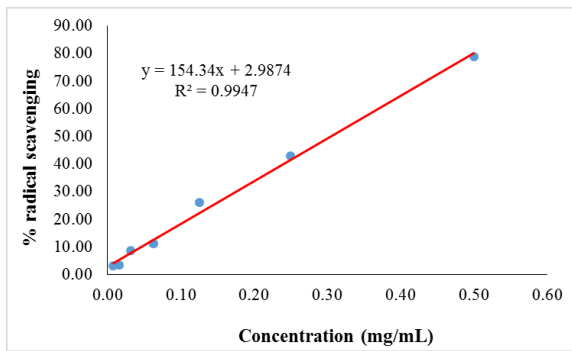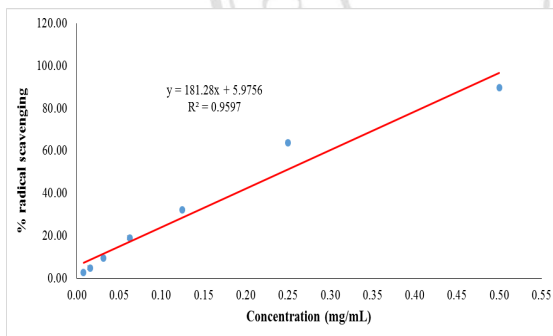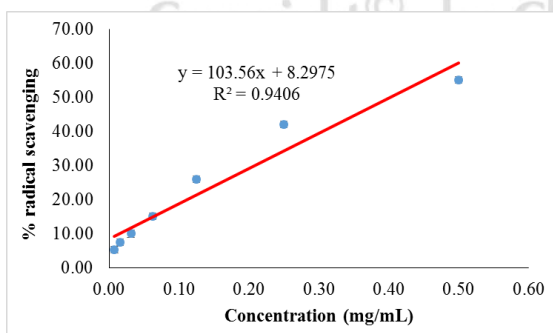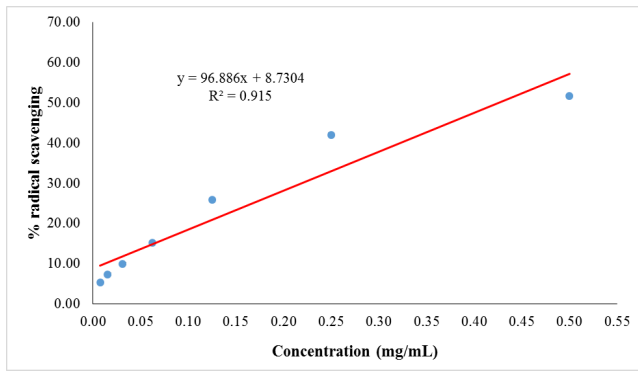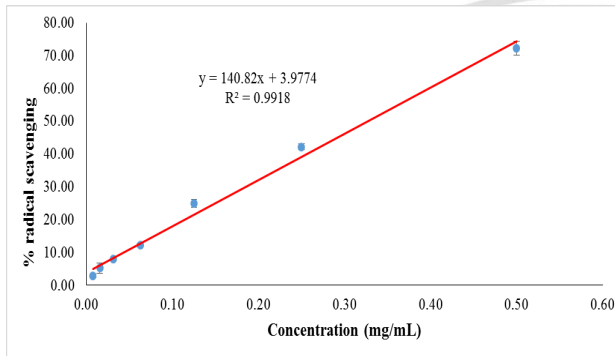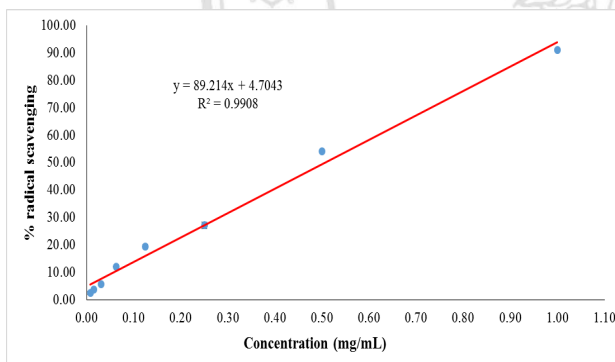

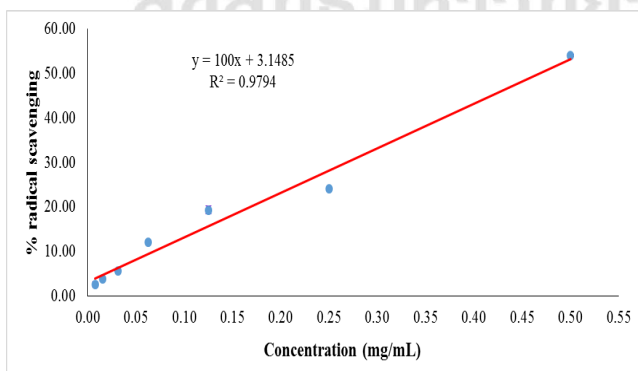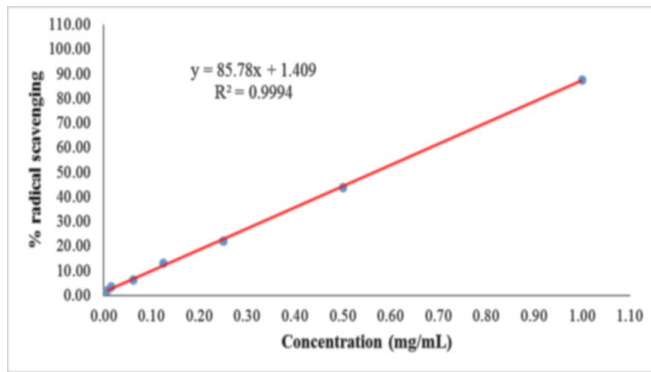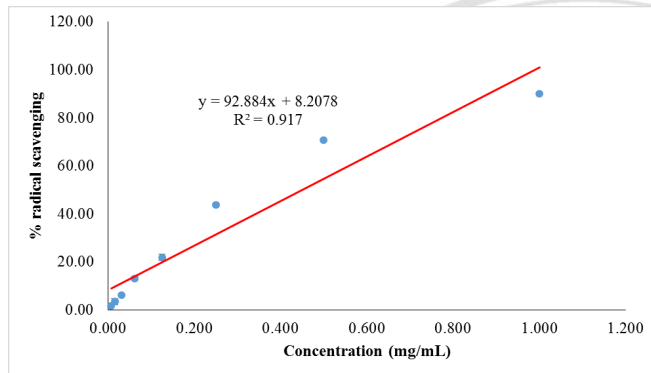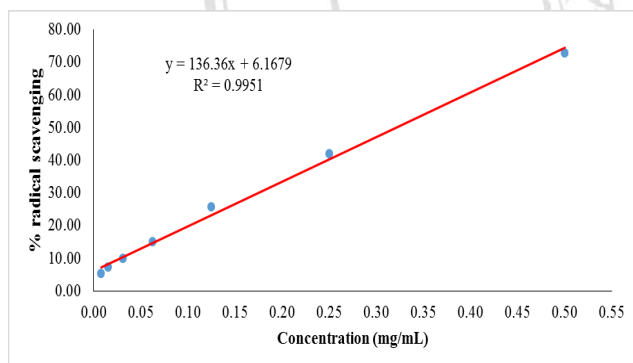Figure A.11   Calibration curve of   acetone extract; A: 25% aq., B: 50% aq., C: 80% aq. and D: 100%

Figure A.12 Calibration curve of ethanol extract; A: 25% aq., B: 50% aq., C: 80% aq. and D: 100%
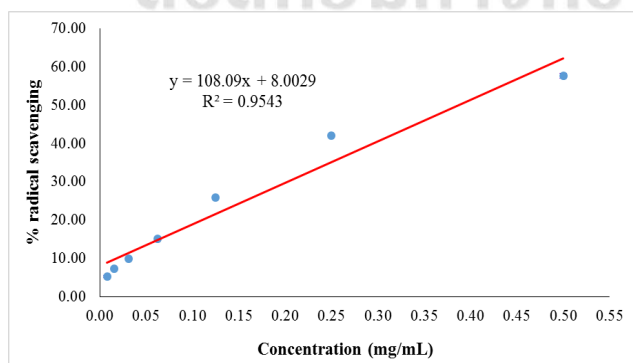
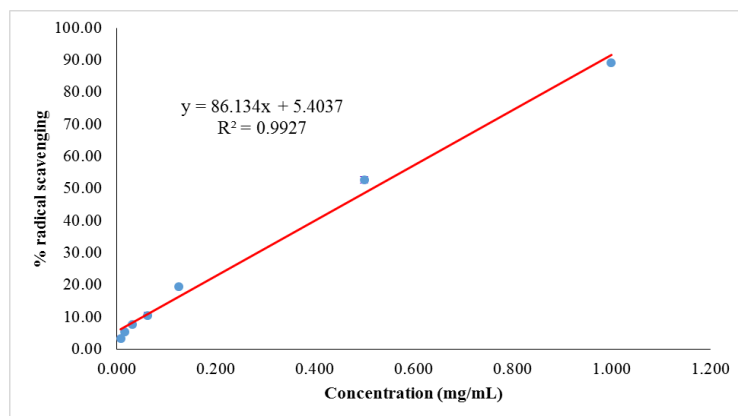**Figure A.13** Calibration curve of methanol extract; A: 25% aq., B: 50% aq., C: 80% aq. and D: 100%
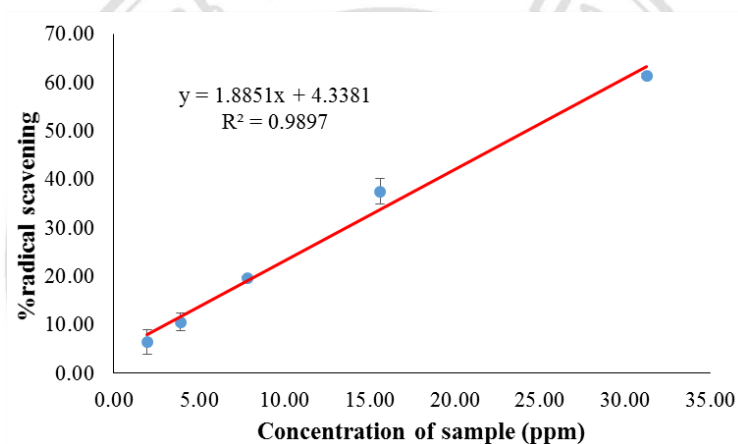
Figure A.14 Calibration curve of water
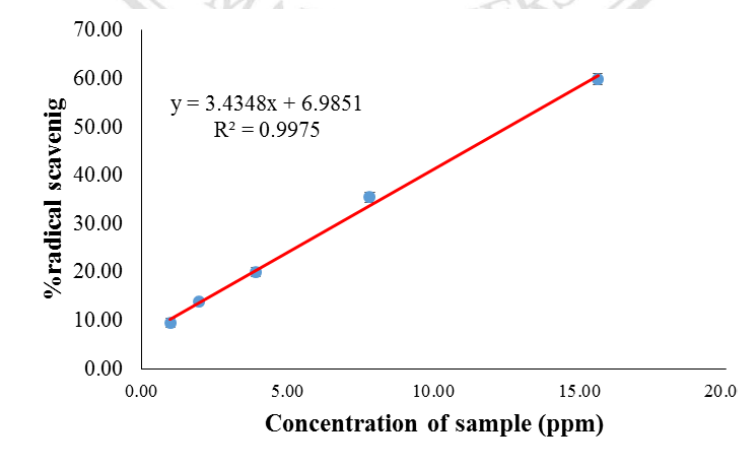

Figure A.15 Calibration curve of fresh leaves extract

Figure A.16 Calibration curve of steamed leaves extract
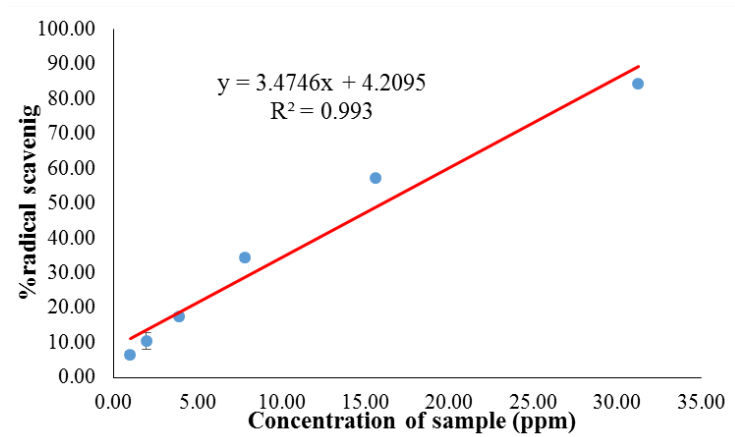
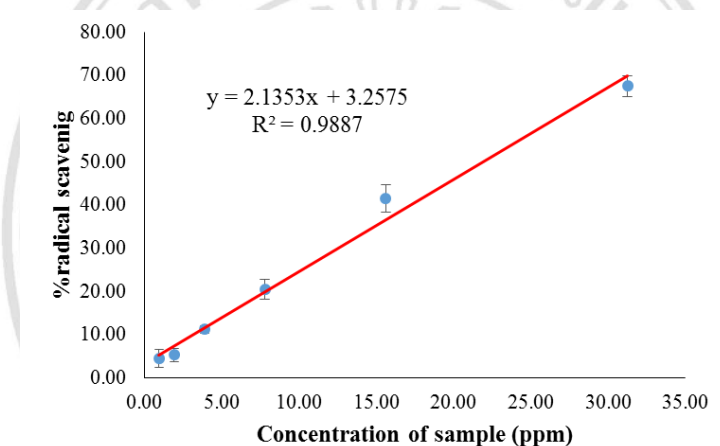**Figure A.17** Calibration curve of 15 days fermented leaves extract

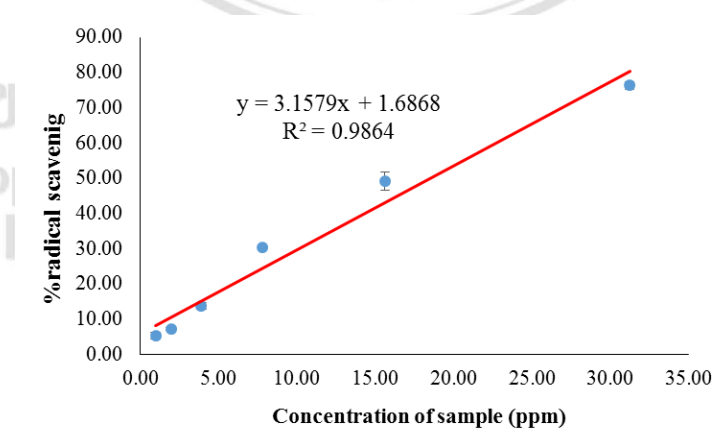**Figure A.18** Calibration curve of 30 days fermented leaves extract

Figure A.19 Calibration curve of 45 days fermented leaves extract
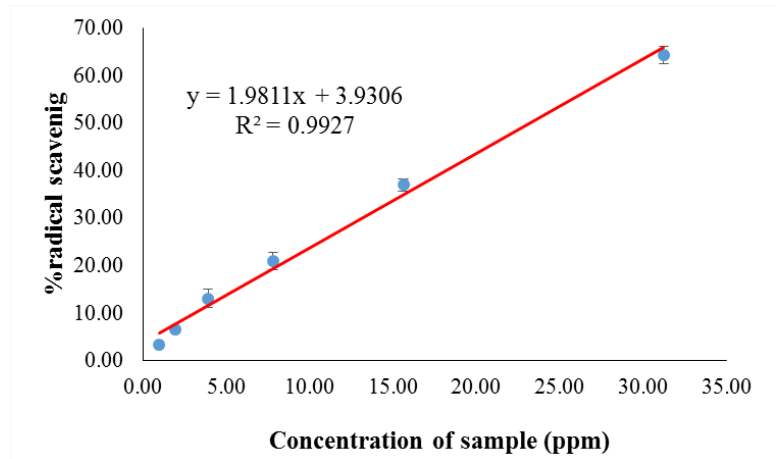
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Figure A.20   Calibration curve of 60 days fermented leaves extract
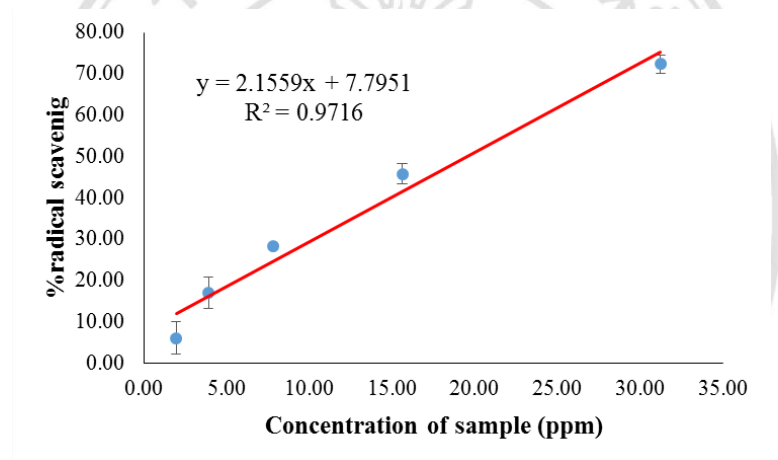

Figure A.21   Calibration curve of 90 days fermented leaves extract
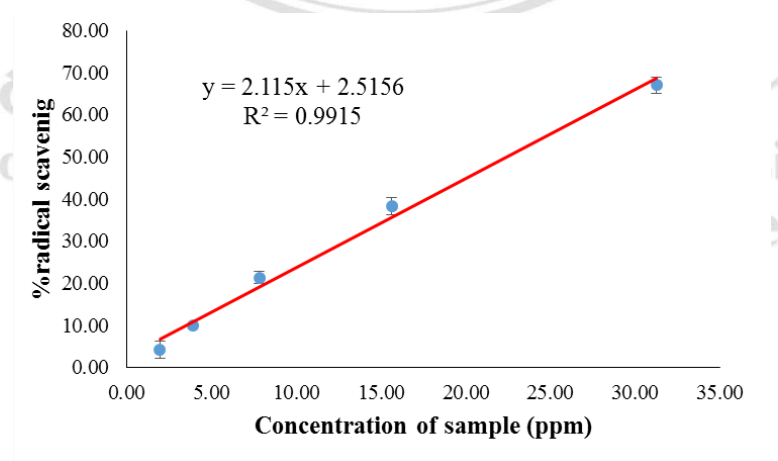

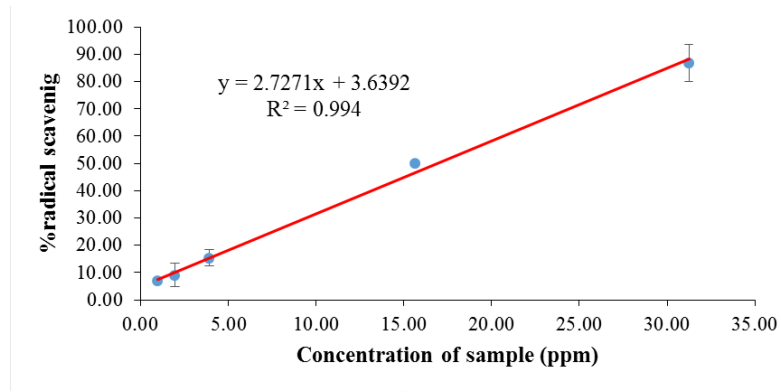**Figure A.22**   Calibration curve of 120 days fermented leaves extract

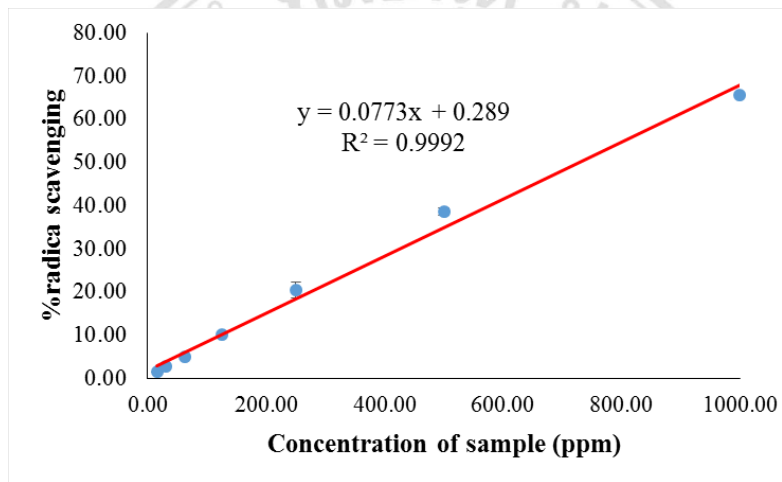**Figure A.23** Calibration curve of 150 days fermented leaves extract
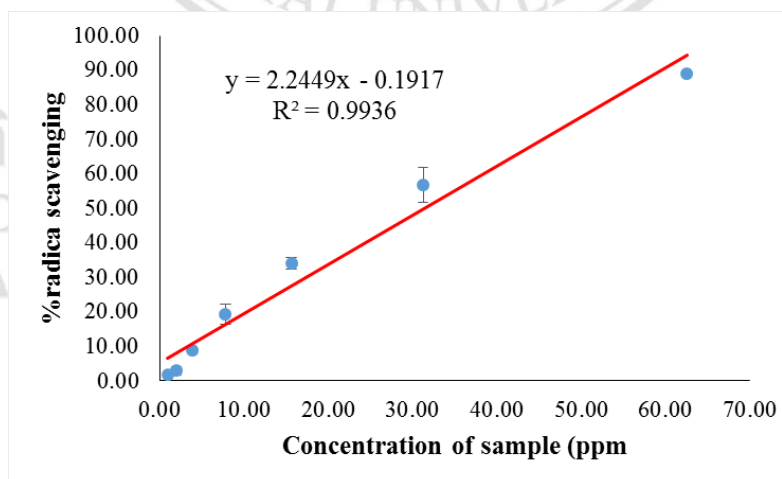

Figure A.24 Calibration curve of steamed water

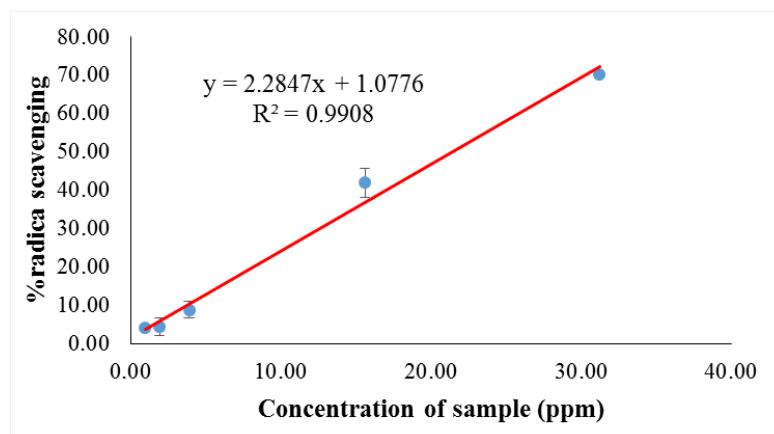**Figure A.25** Calibration curve of 15 days fermented water

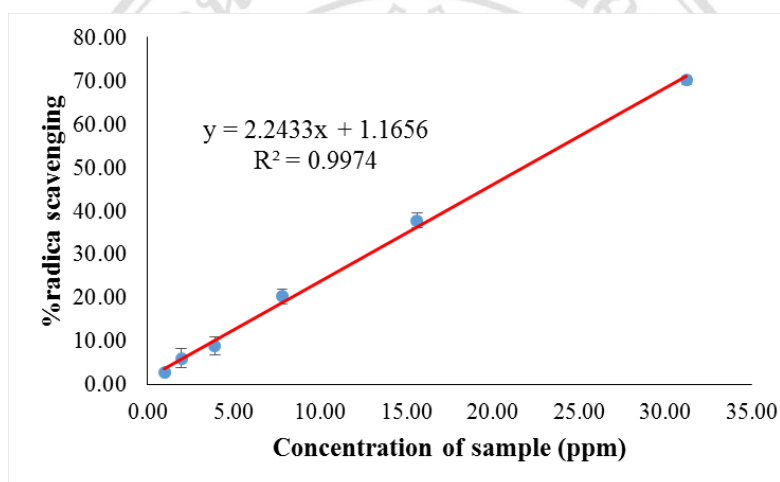**Figure A.26**   Calibration curve of 30 days fermented water

Figure A.27   Calibration curve of 45 days fermented water
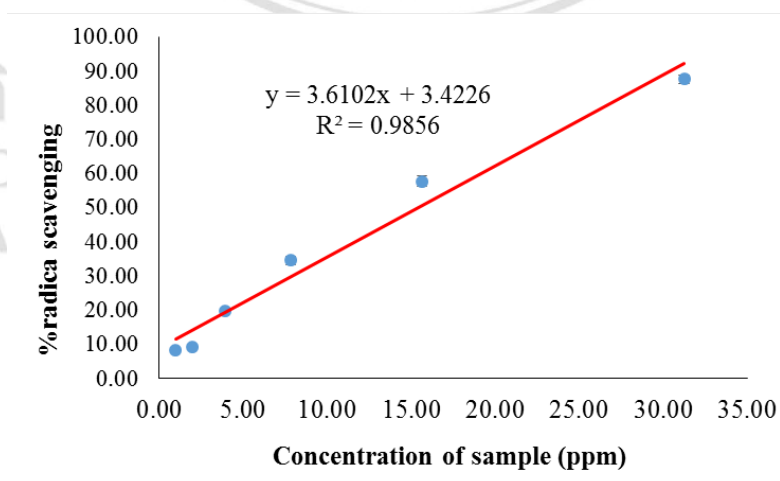

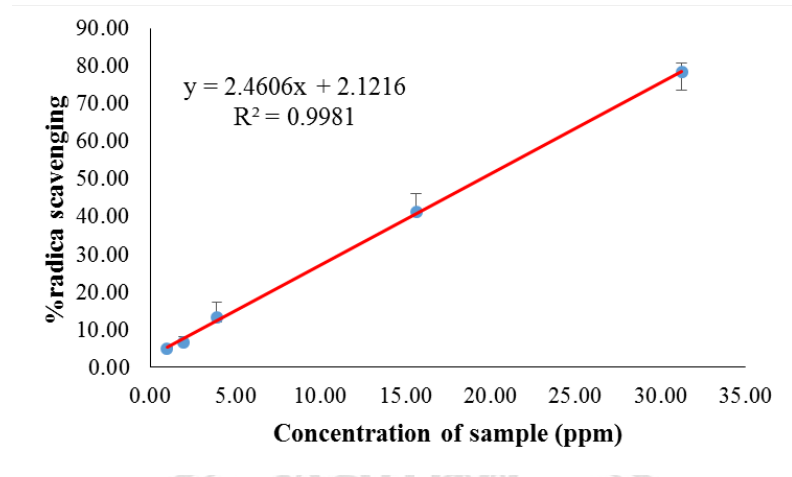**Figure A.28**   Calibration curve of 60 days fermented water

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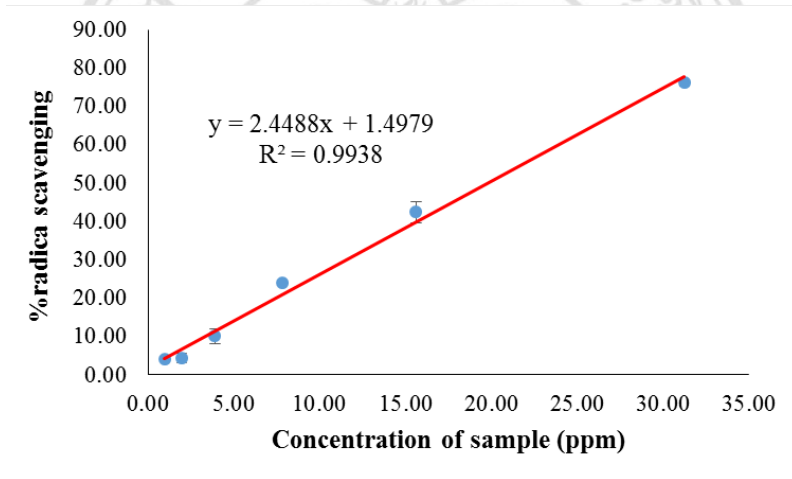**Figure A.29**   Calibration curve of 90 days fermented water

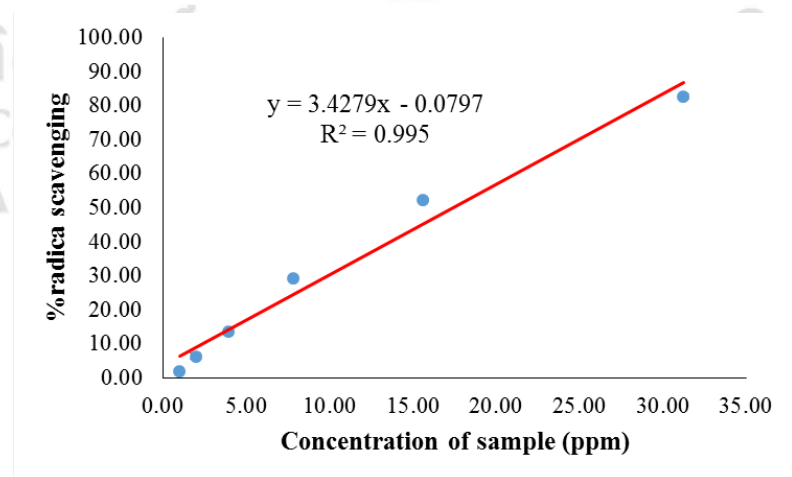**Figure A.30**   Calibration curve of 120 days fermented water

Figure A.31   Calibration curve of 150 days fermented water

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Publication	Chemical Constituents and Antioxidant Activity of *Camellia sinensis* var. *assamica*, Pure and Applied Chemistry International Conference 2017 (Proceeding) 2-3 February 2017, Centra Government Complex Hotel & Convention Centre, Bangkok, Thailand